

Listing of Claims:

1. (currently amended) A method for removing non-condensing gas from a mixture of condensing and non-condensing gases in a condenser having main heat exchanging surfaces for condensing the condensing gas into a liquid, wherein gas is withdrawn from at least one location within the condenser to reduce the mass fraction of non-condensing gas immediately adjacent a cooling surface, the location being selected to correspond to a region within the condenser in which the gas is at a temperature which is lower than the temperature of gas in other regions within the condenser the method comprising:

providing an auxiliary cooling surface in the condenser spaced from the main heat exchanging surfaces;

using the auxiliary cooling surface to provide within the condenser at least one cool region of gas in said mixture of condensing gas and non-condensing gases,

wherein the gases in said cool region are at a temperature which is lower than the temperature of the gases in other regions of the condenser,

and wherein the gases in said cool region comprise a high mass fraction of non-condensing gas when compared to the mass fraction of non-condensing gas in other regions of the condenser; and

withdrawing gas from said at least one cool region of gas.

2. (currently amended) A condenser for condensing gas, the condenser comprising:

a heat exchanging surface for condensing a condensing gas to a liquid; and

a cooling means spaced from the heat exchanging surface for producing a localized region of relatively cold gas, wherein the gas in the localized region of relatively cold gas is at a temperature which is lower than the temperature of gas in other regions within the condenser and which comprises a higher mass fraction of non-condensing gas; and

means for withdrawing non-condensing gas from the localized region of relatively cold gas within the condenser, the gas withdrawing means being positioned to withdraw non-condensing gas from at least one location in which the gas temperature is lower than

in other regions within the condenser and thereby to reduce the mass fraction of non-condensing gas immediately adjacent the heat exchanging surface.

3. (canceled)

4. (currently amended) A condenser according to ~~claim 3~~claim 2, wherein the cooling means comprise a heat exchanger on which gas condenses.

5. (currently amended) A condenser according to ~~claim 3~~claim 2 wherein the cooling means comprises means positioned to be cooled by condensing liquid.

6. (original) A condenser according to claim 5, wherein the cooling means comprises at least one deflector located beneath the heat exchanging surface such that droplets of liquid fall onto and cool the deflector, the gas withdrawing means extracting air from beneath the deflector.

7. (previously presented) A condenser according to claim 6, wherein said at least one deflector comprises a cover extending over an upwardly extending gas withdrawal pipe.

8. (previously presented) A condenser according to claim 6, wherein said at least one deflector comprises an elongate gas withdrawal duct a lower side of which defines apertures through which gas is withdrawn into the elongate duct.

9. (previously presented) A condenser according to claim 6, wherein said at least one deflector comprises an elongate duct an underside of which defines an open channel, the gas withdrawing means being connected to one end of the elongate duct.

10. (previously presented) A condenser according to claim 8 wherein the elongate duct extends beneath and in parallel with a heat exchanger tube of the condenser.

11. (currently amended) A condenser according to claim 6 wherein a shield is located above the ~~or each~~ deflector to shield falling droplets of condensate from gas flowing through the condenser.
12. (currently amended) A condenser according to ~~claim 3~~claim 2, wherein the cooling means comprises a surface which is configured to be cooled by a flow of coolant.
13. (previously presented) A condenser according to claim 12, wherein the surface of the cooling means is configured to be cooled by a flow of coolant to a temperature lower than any heat exchange surface within the condenser.
14. (original) A condenser according to claim 12, wherein the cooling means comprises primary and secondary heat exchangers both defining heat exchange surfaces, the heat exchange surface of the primary heat exchanger being located upstream of the heat exchange surface of the secondary heat exchanger in the flow of gas to be condensed, and the secondary heat exchanger being cooled to a lower temperature than the primary heat exchanger.
15. (original) A condenser according to claim 14, wherein the primary and secondary heat exchangers are cooled by flows of coolant derived from separate sources, the coolant of the secondary heat exchanger being at a lower temperature than the coolant of the first heat exchanger.
16. (previously presented) A condenser according to claim 2 comprising an auxiliary heat exchanger within the condenser, and means for pumping condensed liquid through the auxiliary heat exchanger, the auxiliary heat exchanger being located such that the condensed liquid within it is heated by the gas to be condensed.
17. (original) A condenser according to claim 16, wherein the auxiliary heat exchanger is located upstream of the said heat exchanging surface in the flow of gas to be condensed.

18. (original) A condenser according to claim 12, wherein the cooled surface is defined by a pool of condensed liquid in thermal contact with a cooling device.
19. (original) A condenser according to claim 12, wherein the cooled surface is defined by a wall of the condenser in thermal contact with a cooling device.
20. (original) A condenser according to claim 19, wherein the condenser wall is defined by a cover plate which covers an aperture in the condenser, gas being withdrawn through the cover plate.
21. (original) A condenser according to claim 20, comprising means for monitoring the pressure and temperature of gas adjacent the cover plate, and means for controlling the cooling means to maintain the temperature of the cover plate above the freezing point of the condensed liquid.
- 22-26. (canceled)
27. (withdrawn-currently amended) A method for minimizing the pressure within a containment vessel resulting from the release into the vessel of a pressurized gas which will condense to a liquid at the temperatures and pressures assumed to prevail within the containment vessel, comprising:
providing a containment vessel wherein a body of the liquid of large surface area relative to the area of the vessel is provided in a lower portion of the vessel; and
using the body of the liquid to establish a coolant effective for producing a localized region of non-condensing gas adjacent the coolant, the gas having a lower temperature than gas in other regions within the vessel and comprising a higher mass fraction of non-condensing gas, wherein the localized region of gas is effective to and
thereby reduce the mass fraction of non-condensing gas in an upper portion of the vessel.
28. (withdrawn-currently amended) A containment vessel effective for containing a release into the vessel of pressurized gas which will condense to a liquid at the

temperatures and pressures assumed to prevail within the containment vessel, the containment vessel initially being filled with a gas or gases which will not condense at the temperatures and pressures assumed to prevail within the containment vessel, and the containment vessel including a body of liquid of large surface area relative to the area of the vessel for establishing a coolant in a lower portion of the vessel so as to produce a localized region of ~~non-condensing gas~~ adjacent the coolant, the gas having a lower temperature than gas in other regions within the vessel and comprising a higher mass fraction of non-condensing gas, wherein the localized region of gas is effective and thereby to reduce the mass fraction of non-condensing gas in an upper portion of the vessel.

29. (withdrawn) The containment vessel according to claim 28, comprising at least one open tray arranged to collect condensing liquid to form the said body of liquid.

30. (withdrawn) A containment vessel according to claim 28, comprising means for releasing a stored volume of the liquid into at least one open tray to form the said body of liquid.

31. (withdrawn) A containment vessel according to claim 30, comprising means for sensing pressure within the containment vessel, and means for releasing the stored volume of liquid in the event of the sensed pressure exceeding a predetermined threshold.

32 – 37. (cancelled)

38. (currently amended) A method for reducing the concentration of non-condensing gas from a mixture of condensing and non-condensing gases in a condenser, comprising:

providing a condenser to cool a mixture which includes a condensing gas and a non-condensing gas, wherein the condenser includes main heat exchanging surfaces for condensing the condensing gas into a liquid and an auxiliary cooling surface spaced from the main heat exchanging surfaces;

flowing the mixture within the condenser;

cooling the flowing mixture in the condenser;

using the auxiliary cooling surface to provide~~ing~~ at least one region of relative low mixture temperature within the condenser, the region having relative high concentration of the non-condensing gas;

using the main heat exchanging surfaces to form~~ing~~ condensate in the condenser ~~proximate to~~ at locations that are spatially separated from said region; and

withdrawing gas from said region to reduce the overall concentration of the non-condensing gas in the condenser.

39. (currently amended) An apparatus for condensing gas to liquid, comprising:
a condenser for removing heat from a gas, said condenser having an interior with a main heat exchanging surfaces for condensing gas to a liquid and an auxiliary cooling surface spaced from the main heat exchanging surfaces for producing at least one region of relative low temperature during operation of said condenser, said region being ~~proximate~~ spatially separated from formed condensate during operation of said condenser; and

means for withdrawing gas from said region of said condenser to reduce the concentration of a non-condensing gas in the condenser.

40. (canceled)

41. (withdrawn-currently amended) A method for enhancing the loss of heat from a mixture of gases to a surrounding containment vessel to condense liquid from the gas to limit its pressure, comprising:

providing a containment vessel having an interior and an internal surface area, the containment vessel containing a non-condensing gas and surrounding an apparatus containing a heated and pressurized process fluid;

after a portion of the process fluid is released into the interior of the containment vessel to produce a mixture of condensing and non-condensing gas in the containment vessel, enhancing the loss of heat to the containment vessel to promote cooling of the condensing gas to produce a quantity of condensate and limit the pressure within the containment vessel; and

collecting the condensate in one or more pools within a lower portion of the containment vessel, the collected condensate having a surface area, the surface area of the condensate being large relative to the internal surface area of the containment vessel;

wherein the collected condensate is effective to produce a localized region of gas adjacent the collected condensate, the region of gas having a lower temperature than gas in other regions within the vessel and comprising a high mass fraction of non-condensing gas.